Date: Sat, 12 Feb 94 04:30:21 PST
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V94 #27
To: Ham-Homebrew

Ham-Homebrew Digest Sat, 12 Feb 94 Volume 94 : Issue 27

Today's Topics:

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

Date: Thu, 10 Feb 1994 08:10:36 GMT
From: netcomsv!netcom.com!tgm@decwrl.dec.com
Subject: Aluminium
To: ham-homebrew@ucsd.edu

Jim Buchanan (c22jrb@kopt0002.DElcoelect.COM) wrote:
: I'm looking for a mail-order source for aluminium
: sheets to be used in making panels and cases for
: homebrew eqpt. All local sources I can find have
: minimum orders geared towards manufacturing firms.

One source is to use plain flat aluminium baking sheets such
as one would find in the dime store.

Thomas

Date: 11 Feb 94 15:58:24 -0800
From: agate!howland.reston.ans.net!sol.ctr.columbia.edu!news.kei.com!eff!
news.umbc.edu!europa.eng.gtefsd.com!library.ucla.edu!csulb.edu!nic-nac.CSU.net!
nic.csu.net!vax.sonoma.edu!abel@@..
Subject: code practice oscillator
To: ham-homebrew@ucsd.edu

Well, we had the simplest xmitter thread, so I thought I would start
a simplest code practice oscillator thread. I (and maybe some of my
kids) are thinking about getting a ticket, and I'd just as soon not
go the no-code tech road (couldn't tell you why though). Seems like
I saw a circuit with six components: key, speaker, battery,
transistor, resistor and capacitor. I think I even built it, though
that was two decades ago. Every circuit I've seen recently, though,
had more components and was fairly generic (few component values). I
have an old TV, which has everything except the key and battery
(which I have). Who's got a circuit?

Date: 10 Feb 1994 17:31:07 GMT
From: unix.sri.com!usenet@hplabs.hp.com
Subject: DDS Anyone?
To: ham-homebrew@ucsd.edu

 Does anyone have any experience building or playing with the DDS board
designed by VE3JIL and published in the August '93 issue of '73? It is a
parallel port controlled 0-16Mhz synthesizer. I am interested in using it
in a 432 Mhz receiver which requires a couple of frequency doublings and
I'm wondering if the performance of this board is equal to a VXO in terms
of stability, phase noise etc.
Does anyone have any other DDS designs that are worth considering? There
are many chipsets out there but most are far too expensive for this
application.

ADthanksVANCE Eric, kc6spn

Date: Fri, 11 Feb 1994 16:08:03 GMT
From: agate!howland.reston.ans.net!math.ohio-state.edu!sdd.hp.com!col.hp.com!
srgenprp!news.dtc.hp.com!hplextra!hplb!hpwin052!hpqmoea!dstock@network.ucsd.edu
Subject: Glue v wax
To: ham-homebrew@ucsd.edu

Dick G0BPS (dick@kanga.demon.co.uk) wrote:
: Hi all,
: Reading the info regarding using glue for VFOs.
: I was horrified !!!!
: get some beeswax..... Melt it over the CCT
: it will provide total stability and provide
: physical stability.
: Oh for more bees....
: 73 de Dick

  Start collecting ear-wax now !   in case you want to build a hifi tuner !

    Cheers
           David

Date: Thu, 10 Feb 1994 20:57:59 +0000
From: ucsnews!newshub.sdsu.edu!usc!math.ohio-state.edu!jussieu.fr!univ-lyon1.fr!swidir.switch.ch!scsing.switch.ch!news.dfn.de!news.belwue.de!surz03.hrz.Uni-Marburg.DE!news.th-darmstadt.de!fauern!
Subject: Glue v wax
To: ham-homebrew@ucsd.edu

Hi all,
Reading the info regarding using glue for VFOs.
I was horrified !!!!
get some beeswax..... Melt it over the CCT
it will provide total stability and provide
physical stability.
Oh for more bees....
73 de Dick

Date: 11 Feb 94 20:03:07 GMT
From: news-mail-gateway@ucsd.edu
Subject: Help: I need a Z8 compiler!
To: ham-homebrew@ucsd.edu

Yes, I need a Z8 compiler! (Not a Z80... I have several of those...)

I already have one called "UASM" by Custom Computer Consultants (circa 4/86)
but it is non-standard and buggy...

Does anyone have any other suggestion?

(Before I get any "Why are you using a Z8, anyway?" comments, I might mention that I have a dozen or so complete Z8 microcontrollers with DTMF encoders/decode rs that are waiting to be used in a ham project...)

Thanks,

<Clint>

Internet: ka7oei@uugate.wa7slg.ampr.org
MSYS: ka7oei@wb7esh.ut.usa.na   (ack!)

Date: Fri, 11 Feb 1994 00:27:50 GMT
From: europa.eng.gtefsd.com!paladin.american.edu!nic.hookup.net!news.kei.com!ub!dsinc!netnews.upenn.edu!msuinfo!harbinger.cc.monash.edu.au!bruce.cs.monash.edu.au!trlluna!titan@library.ucla.edu
Subject: MAKING COILS FOR HF
To: ham-homebrew@ucsd.edu

For possible interest (recently published in our local journal "Amateur Radio":-

MAKING AIR-WOUND COILS FOR HF Drew Diamond, VK3XU

We have all admired those photographs of antenna couplers and power amplifiers with Air-Dux (TM) or B&W (TM) air-wound coils. By using the minimum amount of former for support material, they look, and are, efficient. Not many years ago, we could order AusWe have all admired those photographs of antenna couplers and power amplifiers with Air-Dux (TM) or B&W (TM) air-wound coils. By using the minimum amount of former for support material, they look, and are, efficient. Not many years ago, we could order Aust

ralian made equivalents from the William Willis Co., but sadly, no longer trading. At time of writing, there is no known local supplier. They may be ordered from overseas, although the landed cost can be rather high.

For larger coils of perhaps 10 turns of 12 gauge wire, a perspex rectangle may be drilled with the number of holes necessary to accommodate the helix. The coil is wound onto a slightly undersized mandrel, then removed, and threaded or 'screwed' onto the fFor larger coils of perhaps 10 turns of 12 gauge wire, a perspex rectangle may be drilled with the number of holes necessary to accommodate the helix. The coil is wound onto a slightly undersized mandrel, then removed, and threaded or 'screwed' onto the fo

rmer (see Ref. 1). However, when a larger inductance involving tens of turns of smaller gauge wire is required, this technique is rather awkward and time consuming, and the results are not always as good as one would wish.

Here is a method that allows the home brewer to fabricate high-Q coils to requirements. The coil is supported upon a rectangle of perspex, or other low-loss material, such as fibre-glass circuit board- copper removed. Rather than have the turns running thHere is a method that allows the home brewer to fabricate high-Q coils to requirements. The coil is supported upon a rectangle of perspex, or other low-loss material, such as fibre-glass circuit board- copper removed. Rather than have the turns running thr

ough holes, they are fixed upon a rack or comb cut along each edge of the former. In the example shown, we make a near equivalent to the B&W type 3022, which is a 20 uH coil of 40 turns of number 16 B&S, 8 turns per inch, 1.75 inches diameter. A templaterough holes, they are fixed upon a rack or comb cut along each edge of the former. In the example shown, we make a near equivalent to the B&W type 3022, which is a 20 uH coil of 40 turns of number 16 B&S, 8 turns per inch, 1.75 inches diameter. A template i

s recommended if you plan to make more than one coil of a specific diameter. Use brass sheet if you can get it, otherwise steel, about 18 gauge. Carefully, and as accurately as you can, mark out the cutting points for the two racks. A black felt-tip pen is recommended if you plan to make more than one coil of a specific diameter. Use brass sheet if you can get it, otherwise steel, about 18 gauge. Carefully, and as accurately as you can, mark out the cutting points for the two racks. A black felt-tip pen ma

kes a good background medium for marking out. Remember to offset one rack by exactly one half of the pitch. In this example the pitch is 8 t.p.i., so the offset must be 1/16".

A hack-saw frame fitted with one or two blades, according to wire size, or better still, an Abrafile rod-saw (available from engineer's tool suppliers, comes with three blades and clips to suit an ordinary hacksaw) may be used to cut the rack. Take your tA hack-saw frame fitted with one or two blades, according to wire size, or better still, an Abrafile rod-saw (available from engineer's tool suppliers, comes with three blades and clips to suit an ordinary hacksaw) may be used to cut the rack. Take your ti

me, and cut each slot to exactly the same depth, as evenly spaced as possible. Clean up burrs with a smooth file. Cut a rectangle of perspex to size, then sandwich perspex and template together. Fix in place with two small G-clamps (cramps?). Mount the wime, and cut each slot to exactly the same depth, as evenly spaced as possible. Clean up burrs with a smooth file. Cut a rectangle of perspex to size, then sandwich perspex and template together. Fix in place with two small G-clamps (cramps?). Mount the wor

k in a vice, and carefully cut each rack into the perspex.

Cut a length of suitably sized quad timber (90 degrees worth of round stuff) into four equal pieces, slightly longer than the planned coil length. Plane a small bevel along each edge. From thin plywood, make a pair of spacers to fit between the quads. TheCut a length of suitably sized quad timber (90 degrees worth of round stuff) into four equal pieces, slightly longer than the planned coil length. Plane a small bevel along each edge. From thin plywood, make a pair of spacers to fit between the quads. The

spacers should be about an inch longer to provide a 'handle' and so allow you to remove them when the coil is wound. Rub a little linseed oil into these parts to make them more slippery.

When you are ready to wind the coil, position the four quads and their spacers onto the perspex former, then temporarily wrap a length of tape around the assembly to hold the job intact, in order to receive the coil. Roughly calculate the length of wire rWhen you are ready to wind the coil, position the four quads and their spacers onto the perspex former, then temporarily wrap a length of tape around the assembly to hold the job intact, in order to receive the coil. Roughly calculate the length of wire re

quired. In the example above it will be pi times the coil diameter times the number of turns; 3.14 X 1.75 X 40 = 220 inches. Unwind say, 240 inches (20') of wire and clamp the spool in your vice. With a suitable tool, grip the far end of the wire and giequired. In the example above it will be pi times the coil diameter times the number of turns; 3.14 X 1.75 X 40 = 220 inches. Unwind say, 240 inches (20') of wire and clamp the spool in your vice. With a suitable tool, grip the far end of the wire and give

it a firm stretch to remove any small wrinkles. The ends of the winding must be anchored by passing the wire through a hole, or simply by bending the wire into a U, and seating it firmly down into a spare tooth for the purpose. Whilst maintaining tensive it a firm stretch to remove any small wrinkles. The ends of the winding must be anchored by passing the wire through a hole, or simply by bending the wire into a U, and seating it firmly down into a spare tooth for the purpose. Whilst maintaining tension

on the wire, wind the coil onto the former by walking towards the vice. Remember to observe the winding sense. Make sure the wire seats nicely down into each tooth of the rack. When a few turns have been wound on, you can remove the tape; and complete on on the wire, wind the coil onto the former by walking towards the vice. Remember to observe the winding sense. Make sure the wire seats nicely down into each tooth of the rack. When a few turns have been wound on, you can remove the tape; and complete the

winding. Apply a narrow fillet of epoxy glue along the two racks to cement the winding in position. Take care that no glue finds its way onto the quad (the bevel on each of the quads should dodge this problem). Immediately hang the assembly in the verthe winding. Apply a narrow fillet of epoxy glue along the two racks to cement the winding in position. Take care that no glue finds its way onto the quad (the bevel on each of the quads should dodge this problem). Immediately hang the assembly in the vertical

position. Finally, when the glue has set, grip the spacers in a vice and carefully pull one out, then the other.

If taps are required, form a spade on the tapping wire by flattening the end with a hammer. With pointed long-nose pliers, bend a loop in the spade to match the coil wire diameter. The wire may now be hooked and soldered onto the coil at the requisite spoIf taps are required, form a spade on the tapping wire by flattening the end with a hammer. With pointed long-nose pliers, bend a loop in the spade to match the coil wire diameter. The wire may now be hooked and soldered onto the coil at the requisite spot

without risk of shorting adjacent turns (Ref. 2).

The enamelled wire coil shown in the example has a measured Q of 350 at the 2.5 MHz test frequency. Unless it is done properly, silver plating the coil wire has

little benefit, and may actually increase coil losses (Ref 3). Plain, enamelled or tinned coppThe enamelled wire coil shown in the example has a measured Q of 350 at the 2.5 MHz test frequency. Unless it is done properly, silver plating the coil wire has little benefit, and may actually increase coil losses (Ref 3). Plain, enamelled or tinned coppe

r is entirely satisfactory for amateur applications. Wire of 12, 16 or 18 B&S may be obtained from wire & insulation merchants, auto electricians and some electronics suppliers. Ordinary single-strand electrician's wire, stripped of insulation, or 'junkeer is entirely satisfactory for amateur applications. Wire of 12, 16 or 18 B&S may be obtained from wire & insulation merchants, auto electricians and some electronics suppliers. Ordinary single-strand electrician's wire, stripped of insulation, or 'junked-

but-good' power transformers are also a good source.

References

1. Radio Communication Handbook; RSGB, 4th edition, P13.36.
2. Tapping Air-wound Coils; Technical Topics, Rad Comm, May '93.
3. RF Performance of Electroplated Conductors; Fowler, A.M., Electronics Australia July 1970.
4. Constructing Air-wound Coils; Johnson, W7KBE, Ham Radio (USA), Aug. '84.

Date: Thu, 10 Feb 1994 15:36:56 GMT
From: convex!constellation!osuunx.ucc.okstate.edu!olesun!gcouger@uunet.uu.net
Subject: Securing VXO coils, what glue?
To: ham-homebrew@ucsd.edu

In article <tgmCKxytD.3sD@netcom.com>,
Thomas G. McWilliams <tgm@netcom.com> wrote:
>asirene@ntuvax.ntu.ac.sg wrote:
>: I am winding some coils for a VXO and want to know if
>: the "glue-gun" melted plastic is suitable for securing the coil
>: or if it is too lossy?
>
>The classic solution is Q-dope made by dissolving polystyrene
>in a solvent. Polystyrene is plentiful but I can't remember
>the proper solvent. I made a gooey useless mess once when I
>used a less than optimal solvent. Acetone should work.

Almost anyting will disolve styrofoam except water and alcohol. Paint

thinner, gasoline, kerosene, MEK, acetone. I would try paint thinner and
if that didn't suit me I'd use gasoline second it is not much more flamable
than the rest and it is quick drying.

Gordon AB5Dg

/*   Gordon Couger   */
/*   Biosystems & Agricultural Engineering   */
/*   Oklahoma State University   */
/*   114 Ag Hall, Stillwater, OK 74074   */
/* gcouger@olesun.agen.okstate.edu 405-744-9763 day 624-2855 evenings */
/*   I Speak only for myself and not for anyone else   */

Date: 11 Feb 1994 14:50:23 GMT
From: ghost.dsi.unimi.it!univ-lyon1.fr!elendir@tcgould.tn.cornell.edu
Subject: Varactor tuned VFOs
To: ham-homebrew@ucsd.edu

Tom Bruhns (tomb@lsid.hp.com) wrote:
: Greg Bullough (greg@netcom.com) wrote:

: : I've seen a few examples of varactor-tuned VFOs (not VXO's)
: : in various pubs from time to time. They've always, though,
: : been used in receivers... ...I can't recall seeing one
: : used as the basis for a QRP transmitter.

: Continuing the example, 4 bits of count could correct
: +/- 70Hz each 1/10 second, and if you feed the correction
: into an integrator, it will track. If you have a drift

 It isn't that simple. You must design the integrator very carefully in
order to do so, and insure that the setting time of the VCO is under the
1/10 limit. And then, take care that there is no oscillations.
 For this kind of application, you need a third order low-pass integrator,
because a second order won't follow the correction speed.

 Vince (10.5 weeks and waiting...)

Date: Mon, 7 Feb 1994 19:02:51 GMT
From: ucsnews!sol.ctr.columbia.edu!howland.reston.ans.net!vixen.cso.uiuc.edu!
sdd.hp.com!hpscit.sc.hp.com!cupnews0.cup.hp.com!news1.boi.hp.com!hp-pcd!hpcvsnz!
tomb@network.ucsd.edu
Subject: Varactor tuned VFOs
To: ham-homebrew@ucsd.edu

Greg Bullough (greg@netcom.com) wrote:

: I've seen a few examples of varactor-tuned VFOs (not VXO's)
: in various pubs from time to time. They've always, though,
: been used in receivers... ...I can't recall seeing one
: used as the basis for a QRP transmitter.

Actually, in a sense, there are a whole lot of them: as
VCO's in PLLs in things like handhelds. As someone else
pointed out, they aren't particularly temp stable, but a
bit of feedback can solve that problem. And you can
frequency or phase lock them quite easily: frequency
locking is especially easy, since if you assume that the
VCO won't drift too much in a single count period (say
1/10 second), you only have to keep track of the least
significant bits to get enough info for a correction.
Continuing the example, 4 bits of count could correct
+/- 70Hz each 1/10 second, and if you feed the correction
into an integrator, it will track. If you have a drift
that large, you probably need to work on the open-loop
characteristics anyway, before closing the loop. Anyway,
the result would be a 10Hz reference, a 4 bit counter,
a 4 bit latch to save the "desired", a 4 bit adder
(actually subtracter) to find the error, a 4 bit DAC
(4 resistors driven from the CMOS output of the adder),
and an integrator. You could put all that in a FPGA
(including the reference generator and timing stuff)
pretty trivially. But you can also do it with common
parts that have been available since the late '60's...

(Refinements are possible: for example, you can make
the "DAC" nonlinear so that if the frequency is close,
undersize corrections are made, so that there is less
"hunting" tendency.)

73, K7ITM

End of Ham-Homebrew Digest V94 #27
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